

1 20. (New) A scanning exposure method according to
2 claim 8, further comprising:

3 rotating an optical member disposed in the path of the
4 exposure beam, in order to adjust an intensity distribution
5 of the exposure beam in a non-scanning direction
6 perpendicular to the scanning direction.

1 21. (New) A scanning exposure method according to
2 claim 20, wherein the exposure beam has an intensity
3 distribution in the scanning direction, wherein the
4 intensity distribution in the scanning direction has slope
5 portions at the edges thereof.

1 22. (New) A scanning exposure method according to
2 claim 20, wherein the optical member includes a field stop.

REMARKS

Favorable reconsideration of this application as amended is respectfully requested.

A new Abstract of the Disclosure has been provided as required.

Claims 4 and 9 have been amended to change "rated" to --predetermined--, which does not narrow the scope of these claims. Also, typographical errors have been corrected in Claims 1 and 2.

The rejection under 35 U.S.C. § 102(b) based on Kamiya et al. is respectfully traversed.

Independent Claims 1 and 2 recite a scanning exposure apparatus in which a substrate is exposed by synchronously moving a mask and a substrate. Independent Claims 3 and 8 recite a scanning exposure method in which a substrate is exposed by synchronously moving a mask and a substrate. Independent Claims 13 and 14 recite a laser apparatus used with a scanning exposure system in which a mask and a substrate are moved during scanning exposure of the substrate. Independent Claims 15 and 16 recite a device manufacturing method including scanning exposure process in which a substrate is exposed by synchronously moving a mask and a substrate.

Kamiya et al. do not disclose a scanning exposure apparatus or method as recited in Applicant's claims. In Kamiya et al., movement of a stage is used to position a mark in an alignment process, but there is no scanning exposure apparatus or method in which both a mask and a substrate are moved to perform a scanning exposure. In Kamiya et al. a laser source 200 emits light in synchronism with a position signal PS of an interferometer 180 (column 5, lines 3-6), but there is no teaching in Kamiya et al. of controlling the start and stop timing of pulses emitted in

a scanning exposure apparatus or method, particularly where trigger signals are output at predetermined time intervals, as recited in Applicant's claims.

In a scanning exposure, the timing of starting and stopping of pulse emission is very important. In the scanning exposure, a mask and a substrate are moved not only during an exposure onto a shot area, but also before and after the exposure, so that if the timing of starting and stopping of the emission of pulses is not correct, an undesired exposure may occur. Nothing of the sort is taught or suggested by Kamiya et al.

Accordingly, the independent claims referred to above, as well as the claims dependent thereon, are believed to be clearly allowable. New dependent Claims 17-22 have been added to provide more comprehensive patent protection.

This application is now believed to be clearly in condition for allowance.

A check for \$36.00 is attached in payment of the required fee for additional claims.

The Commissioner is hereby authorized to charge to Deposit Account No. 50-1165 any fees under 37 C.F.R. §§ 1.16 and 1.17 that may be required by this paper and to credit any overpayment to that Account. If any extension of time is required in connection with the filing of this

paper and has not been requested separately, such extension
is hereby requested.

Respectfully submitted,

NHS:jab

Miles & Stockbridge P.C.
1751 Pinnacle Drive, Suite 500
McLean, Virginia 22102-3833
(703) 903-9000

By: Nelson H. Shapiro
Nelson H. Shapiro
Reg. No. 17,095

November 19, 2002

MARKED-UP COPY OF THE CLAIMS:

1 1. (Amended) A scanning exposure apparatus in which
2 a substrate is exposed by synchronously moving a mask and
3 the substrate, the apparatus comprising:

4 a beam source which emits pulses of an exposure beam
5 in response to trigger signals output at predetermined time
6 intervals;

7 a projection system disposed in a path of the exposure
8 beam from the beam source and which projects an image of a
9 pattern formed on the mask onto the substrate, the mask to
10 be disposed on one side of the projection system and the
11 substrate to be disposed on another side thereof;

12 a stage disposed on the one side or the other side of
13 the projection system and which is movable in a scanning
14 direction while holding the mask or the substrate,
15 respectively; and

16 [a] an interferometer operatively connected to the
17 stage and which outputs a measurement value corresponding
18 to positional information of the stage in the scanning
19 direction;

20 wherein a start timing of the output of the trigger
21 signals is controlled based on the measurement value from
22 the interferometer.

1 2. (Amended) A scanning exposure apparatus in which
2 a substrate is exposed by synchronously moving a mask and
3 the substrate, the apparatus comprising:

4 a beam source which emits pulses of an exposure beam
5 in response to trigger signals output at predetermined time
6 intervals;

7 a projection system disposed in a path of the exposure
8 beam from the beam source and which projects an image of a
9 pattern formed on the mask onto the substrate, the mask to
10 be disposed on one side of the projection system and the
11 substrate to be disposed on another side thereof;

12 a stage disposed on the one side or the other side of
13 the projection system and which is movable in a scanning
14 direction while holding the mask or the substrate,
15 respectively; and

16 [a] an interferometer operatively connected to the
17 stage and which outputs a measurement value corresponding
18 to positional information of the stage in the scanning
19 direction;

20 wherein a stop timing of the output of the trigger
21 signals is controlled based on the measurement value from
22 the interferometer.

1 4. (Amended) A scanning exposure method according to
2 claim 3, wherein the beam source emits the pulses of the
3 exposure beam at a [rated] predetermined maximum frequency.

1 9. (Amended) A scanning exposure method according to
2 claim 8, wherein the beam source emits the pulses of the
3 exposure beam at a [rated] predetermined maximum frequency.